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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/802,615

03/16/2004

Raymond J. Cho

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EXAMINER

RAYYAN, SUSAN F

ART UNIT

PAPER NUMBER

2167

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/802,615

Applicant(s)

CHO ET AL.

Examiner

Susan F. Rayyan

Art Unit

2167

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 4-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. Preliminary amendment was filed on March 16, 2004.
2. Claims 1-3 have been canceled. Claim 4 has been amended. Claims 5-8 are original in presentation. New claims 9-36 have been added. Claims 4-36 are currently pending.

#### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

**Claims 22,25-34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.**

Regarding claim 22, Examiner could not find a description of the limitation of the claim in the specification including first semantic structure, second semantic structure and translation.

Regarding claim 25, Examiner could not find a description of the limitation of the claim in the specification including first object and second object.

Regarding claim 26, Examiner could not find a description of the limitation of the claim in the specification including second object is an additional process or pathway.

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Regarding claim 27, Examiner could not find a description of the limitation of the claim in the specification including first object, second object and third object.

Regarding claim 28, Examiner could not find a description of the limitation of the claim in the specification including first object, second object and modifier.

Regarding claim 29, Examiner could not find a description of the limitation of the claim in the specification including first object is a comparison of the property ... and the process is a relative comparison ...

Regarding claim 30, Examiner could not find a description of the limitation of the claim in the specification including process modifier, second object is a process or a pathway.

Regarding claim 31, Examiner could not find a description of the limitation of the claim in the specification including first object as an effector and second object.

Regarding claim 32, Examiner could not find a description of the limitation of the claim in the specification including the process indicates a lack of action upon one or more second objects.

Regarding claim 33, Examiner could not find a description of the limitation of the claim in the specification including one or more modifiers.

Regarding claim 34, Examiner could not find a description of the limitation of the claim in the specification including object and process include property annotations indicating one of a cellular, organ, or other physical location.

*Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 4-16, 18, 20-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Publication Number 2002/0165737 issued to Howard E. Mahran ("Mahran") and US Patent Number 5,625,721 issued to Daniel P. Lopresti et al ("Lopresti").**

**As per independent claim 4 Mahran teaches:**

selecting articles to serve as an information source for the knowledge representation (paragraph 21, as extracting information from medical literature to build a medical database);

extracting and formatting information contained in the articles for storage in the knowledge representation (paragraph 17, as extracting information from medical literature) including representing a fact expressed in an article's natural language as at least an object and process relationship(paragraph 123, object equates to field: id, process equates to the field: treatment id); and storing the formatted information in the knowledge representation (paragraph 21, as storing in a medical database).

Mahran does not explicitly teach verifying that the information extracted from the selected articles is correct and that it has been placed in the correct format. Lopresti does teach this limitation (column 2, lines 12-48, as post-processing ) to delete and correct errors. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mahran with verifying that the information extracted from the selected articles is correct and that it has been placed in the correct format to allow reviewers to identify and correct errors associated with the extracted information in order to delete and correct errors during information extraction before storing information in the database (column 2, lines 11-45).

**As per claim 5**, same as claim arguments above and Mahran teaches:

wherein the extracting information step is performed by knowledge extraction personnel (paragraph 22, as editorial review board) . Mahran does not explicitly teach and the verifying step is performed by quality control personnel. Lopresti does teach this limitation (column 2, lines 35-37, as human-post processor) to delete and correct errors. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mahran with the verifying step is performed by quality control personnel to allow reviewers to identify and correct errors

associated with the extracted information in order to delete and correct errors during information extraction before storing information in the database.

**As per claim 6**, same as claim arguments above and Mahran teaches:

wherein both the extracting step and verifying step are performed by the same person, which person has been qualified by a predetermined procedure to perform both steps simultaneously (paragraph 115, lines 4-6, as personnel to extract and interpret and prepare calculations).

**As per claim 7**, same as claim arguments above and Mahran teaches:

wherein at least the steps of extracting and verifying occur in geographically separated locations (paragraph 115, lines 4-6, and paragraph 22 as personnel to extract and interpret and prepare calculations and an expert ).

**As per claim 8**, same as claim arguments above and Mahran teaches:

wherein the geographically separate locations are chosen based upon the cost of performing the respective steps of extracting and verifying,... (paragraph 115, lines 4-6, and paragraph 22 as personnel to extract and interpret and prepare calculations and an expert ).

**As per claim 9**, same as claim arguments above and Mahran teaches:

wherein the extracting information step includes using a computer-driven parser of natural language (Figure 1A, element 206, parser).

**As per claim 10**, same as claim arguments above and Mahran teaches:

wherein the representing step includes representing an object and process relationship in the form of the process being an action that acts upon the object (paragraph 123, object equates to field: id, process equates to the field: treatment id).

**As per claim 11**, same as claim arguments above and Mahran teaches:

wherein the representing step includes representing an object and process relationship in the form of the first object being an effector of the process and the process is an action that acts upon one or more second objects. paragraph 123, object equates to field: id, process equates to the field: treatment id).

**As per independent claim 12** Mahran teaches:

an information extraction unit which extracts a finding from an article's natural language and translates this finding into a structured finding comprising at least an object, process, and a relationship between the object and process(paragraph 123, object equates to field: id, process equates to the field: treatment id);

an information storage unit in communication with the second database for storing the structured finding in the second database(paragraph 21, as storing in a medical database).

Mahran does not explicitly teach ... determining if the structured finding has been properly formatted for storage in the second database. Lopresti does teach this limitation (column 2, lines 35-37, as human-post processor) to delete and correct errors. It would have been obvious to one



of ordinary skill in the art at the time of the invention to modify Mahran with ... determining if the structured finding has been properly formatted for storage in the second database to allow reviewers to identify and correct errors associated with the extracted information in order to delete and correct errors during information extraction before storing information in the database column 2, lines 11-46).

**As per claim 13**, same as claim arguments above and Mahran teaches:

further comprising a query management and information display unit for responding to user inquiries for information stored in the second database and for retrieving information from the second database in response to those queries (paragraph 140, a output dataset).

**As per claim 14**, same as claim arguments above and Mahran teaches:

wherein the second database is frame-based (Figure 1A, element 22).

**As per claim 15**, same as claim arguments above and Mahran teaches:

wherein the structured finding is formatted according to a fact-based model (paragraph 108-111, as extracting data from a study into a database from future retrieval).

**As per claim 16**, same as claim arguments above and Mahran teaches:

wherein the relationship between the object and process takes the form of the process is an action that acts upon the object(paragraph 123, object equates to field: id, process equates action equates to the field: treatment id).

**As per claim 18**, same as claim arguments above and Mahran teaches:

wherein the finding is derived from one or more sentences, a portion of sentence, a diagram, figure or table (paragraph 21, as extract information from literature) .

**As per claim 20**, same as claim arguments above and Mahran teaches:

wherein the first database is coupled to, and in communication with the information extraction unit (Figure 1A).

**As per claim 21**, same as claim arguments above and Mahran teaches:

further including an article selection unit, for selecting articles for information extraction from among a plurality of articles residing in the first database (paragraph 69, identifying useful papers and extracting information).

**As per claim 22**, same as claim arguments above and Mahran teaches:

wherein the article's representation of the finding has a first semantic structure and wherein the translation of the finding includes a translation of the finding into a natural language having a second semantic structure (paragraph 23).

**As per claim 23**, same as claim arguments above and Mahran teaches:

wherein information is extracted using a user template (paragraph 112, as populating fields by a skilled technician include a template) .

**As per claim 24**, same as claim arguments above and Mahran teaches:

wherein information is extracted using a computer-driven parser of the natural language (Figure 1A, element 206, parser).

**As per claim 25**, same as claim arguments above and Mahran teaches:

wherein the structured finding comprises a first object, second object and a process relationship(paragraph 123, object equates to field: id, process equates to the field: treatment id).

**As per claim 26**, same as claim arguments above and Mahran teaches:

wherein the second object is an additional process or pathway(paragraph 123, object equates to field: id, process equates to the field: treatment id).

**As per claim 27**, same as claim arguments above and Mahran teaches:

wherein the first object is an effector of the process and the process is an action that acts upon the second object and that is mediated by a third object (paragraph 123, objects equates to field: ids, process equates action equates to the field: treatment id).

**As per claim 28**, same as claim arguments above and Mahran teaches:

wherein the first object, second object and process include modifiers (paragraph 123, objects equates to field:ids, process include a modifier equates to the field: treatment id).

**As per claim 29**, same as claim arguments above and Mahran teaches:

wherein the first object is a first comparison of the property between two objects or processes, the second object is a second comparison of the property between two objects or processes, and the process is a relative comparison between the first and second comparisons(paragraph 123, objects equates to field:ids, process include a modifier equates to the field: treatment id).

**As per claim 30**, same as claim arguments above and Mahran teaches:

wherein the process is a process modifier and the structured finding further includes a second object that is a process or a pathway(paragraph 123, objects equates to field:ids, process include a modifier equates to the field: treatment id).

**As per claims 31, 32** same as claim arguments above and Mahran teaches:

wherein the object and process relationship takes the form of a first object as an effector of the process and the process indicates an action that acts upon one or more second objects(paragraph 123, objects equates to field:ids, process equates to the field: treatment id).

**As per claim 33**, same as claim arguments above and Mahran teaches:

wherein the object contains one or more modifiers. (paragraph 123, objects equates to field:ids, process include a modifier equates to the field: treatment id).

**As per claim 35**, same as claim arguments above and Mahran teaches:

wherein the object is an effector of a plurality of processes and all of these processes are actions that act upon a second object (paragraph 123, objects is an effector equates to field:ids, process are actions equates to the field: treatment id).

**As per claim 36**, same as claim arguments above and Mahran teaches:

wherein the article's natural language includes a first and second finding and wherein the first finding comprises the process and object and the object includes the second finding (paragraph 21, information extraction equates to the findings and paragraph 123, objects is an effector equates to field:ids, process are actions equates to the field: treatment id).

**Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Publication Number 2002/0165737 issued to Howard E. Mahran ("Mahran") and US Patent Number 5,625,721 issued to Daniel P. Lopresti et al ("Lopresti") in view of US Patent Number 6,470,277 issued to Daniel J. Chin et al ("Chin").**

**As per claim 17**, same as claim arguments above and Mahran and Lopresti do not explicitly teach wherein the object is a gene, protein, cell, or organism. Chin does teach this limitation (Abstract, as gene) to facilitate identification of candidate genes. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mahran and Lopresti with wherein the object is a gene, protein, cell, or organism to facilitate identification of candidate genes. (column 3, lines 29-30).

As per claim 34, same as claim arguments above and Mahran and Lopresti do not explicitly teach wherein the object and process include property annotations indicating one of a cellular, organ, or other physical location. Chin does teach this limitation (column 3, 39-41) to facilitate identification of candidate genes. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mahran and Lopresti with the object and process include property annotations indicating one of a cellular, organ, or other physical location to facilitate identification of candidate genes. (column 3, lines 29-30).

**Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Publication Number 2002/0165737 issued to Howard E. Mahran ("Mahran") and US Patent Number 5,625,721 issued to Daniel P. Lopresti et al ("Lopresti") in view of US Patent Number 6,498,795 issued to Junbiao Zhang et al ("Zhang").**

As per claim 19, same as claim arguments above and Mahran and Lopresti do not explicitly teach wherein the second database includes an ontology. Zhang does teach this limitation (column 7, line 15-34, as ontology) to ensure agents interact with one another coherently and consistently since they commit to use a set of definitions and conceptualizations. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mahran and Lopresti with wherein the second database includes an ontology to ensure agents interact with one another coherently and consistently since they commit to use a set of definitions and conceptualizations (column 7, lines 15-24).

**Contact Information**


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Rayyan whose telephone number is (571) 272-1675. The examiner can normally be reached M-F: 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Susan Rayyan

December 6, 2007

  
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